

REMARKS/ARGUMENTS

Claims 11-24 are pending in this application. By this Amendment, Applicant AMENDS claims 11, 12, 18, and 22.

Claims 11, 16, and 21-23 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Yoshikawa et al. (U.S. 5,163,063) in view of Kaplan (U.S. 4,785,456). Claims 12 and 14 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Yoshikawa et al. in view of Davis (U.S. 5,276,697). Claims 13, 15, and 17-20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Yoshikawa et al. and Davis, and further in view of Kaplan. Claim 24 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Yoshikawa et al. and Kaplan, and further in view of Davis.

Applicant respectfully traverses the rejections of claims 11-24.

Claim 11 has been amended to recite:

A laser element driving apparatus comprising:
a laser element arranged to vary a light intensity corresponding to a current that flows thereto;
a photodetection element arranged to monitor and convert the light intensity of the laser element to electric signals;
an emission control switch arranged to control the current flowing to the laser element;
a feedback amplifier arranged to control the emission control switch by feeding back electric signals of the photodetection element;
an emission control switch controlling circuit arranged to determine as abnormal a current flowing continuously to the laser element for a predetermined time from the beginning of light emission of the laser element, and to turn OFF the emission control switch; and
a power source switch arranged between a power source and an inner power source, and which opens and closes corresponding to intermittent control signals, the inner power source supplying power to the emission control switch and the feedback amplifier. (emphasis added)

With the unique combination and arrangement of features recited in Applicant's claim 11, including the feature of "a power source switch arranged between a power source and an inner power source, and which opens and closes corresponding to intermittent control signals, the inner power source supplying power to the emission control switch and the feedback

amplifier," Applicant has been able to provide a laser element driving apparatus that prevents long-term or high intensity light emission of a laser element having deleterious effects on the human eye such that safety in relation to the human eye can be heightened (see, for example, paragraph [0007] of Applicant's specification).

The Examiner alleged that the combination of Yoshikawa et al. in view of Kaplan teaches all of the features recited in Applicant's claim 11. More specifically, the Examiner alleged that Yoshikawa et al. teaches the features of claim 11 except for "[a]n emission control switch controlling circuit arranged to determine as abnormal a current flowing continuously to the laser element for a predetermined time from the beginning of light emission of the laser element and to turn OFF the emission control switch." To remedy this deficiency in Yoshikawa et al., the Examiner relied on Kaplan, alleging, "Kaplan discloses, 'An emission control switch controlling circuit arranged to determine as abnormal a current flowing continuously to the laser element for a predetermined time from the beginning of light emission of the laser element and to turn OFF the emission control switch' (col. 7, lines 42-49)." Thus, the Examiner concluded, "It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Yoshikawa [et al.] with the teachings of Kaplan. Detection and prevention of the laser operating outside of a designated discharge program as taught by Kaplan would enhance the teachings of Yoshikawa [et al.] by providing additional factors by which abnormality may be determined."

Applicant has amended claim 11 to recite the feature of "a power source switch arranged between a power source and an inner power source, and which opens and closes corresponding to intermittent control signals, the inner power source supplying power to the emission control switch and the feedback amplifier." Support for this feature is found, for example, in Applicant's previously filed claim 22.

Neither Yoshikawa et al. nor Kaplan teaches or suggests this feature.

Yoshikawa et al. teaches a semiconductor laser driving system that includes a laser package 1, monitoring circuit 101, a controlling circuit 102, a powering circuit 103, and an abnormality detecting circuit 104, as shown in Fig. 1 of Yoshikawa et al. The controlling circuit

102 of the semiconductor laser driving system of Yoshikawa et al. further includes an analog switch 7 that is arranged to turn off the supply of power flowing from the powering circuit 103 to the laser package 1, as discussed in column 7, lines 39-47 and shown in Fig. 2 of Yoshikawa et al. In Paragraph No. 9 of the outstanding Office Action, the Examiner alleged that the controlling circuit discussed in column 3, line 48 to column 4, line 3 of Yoshikawa et al. corresponds to the power source switch that is presently recited in Applicant's claim 11.

The Examiner has failed to clearly point out any portions of Yoshikawa et al. that could possibly correspond to a power source, a power source switch, or an inner power source. In light of the Examiner's failure to clearly indicate which portion of Yoshikawa et al. corresponds to the power source switch, Applicant will assume *arguendo* that the Examiner is interpreting the analog switch 7 of Yoshikawa et al. as the "power source switch." However, the analog switch 7 of Yoshikawa et al. is merely arranged to provide a feedback path between the inverting input and the output of differential amplifier 5 of Yoshikawa et al. that will cause the transistor 10 of Yoshikawa et al. to turn off the power supplied to the laser package 1, as shown in Fig. 2 of Yoshikawa et al. At best, the only power supplied to the analog switch 7 of Yoshikawa et al. is the control voltage supplied from the AND gate circuit 24.

Thus, Yoshikawa et al. clearly fails to teach or suggest the feature of "a power source switch arranged between a power source and an inner power source, and which opens and closes corresponding to intermittent control signals, the inner power source supplying power to the emission control switch and the feedback amplifier" as presently recited in Applicant's claim 11.

Kaplan merely teaches a toggle circuit that can be used to disconnect a laser power supply that is similar to the analog switch 7 of Yoshikawa et al., as discussed in column 7, lines 42-49 of Kaplan. Kaplan fails to teach or suggest the feature of "a power source switch arranged between a power source and an inner power source, and which opens and closes corresponding to intermittent control signals, the inner power source supplying power to the emission control switch and the feedback amplifier" as presently recited in Applicant's claim 11.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the

rejection of claim 11 under 35 U.S.C. § 103(a) as being unpatentable over Yoshikawa et al. in view of Kaplan.

The Examiner relied upon Davis to allegedly cure the deficiencies of Yoshikawa et al. and Kaplan. However, Davis also fails to teach or suggest the feature of “a power source switch arranged between a power source and an inner power source, and which opens and closes corresponding to intermittent control signals, the inner power source supplying power to the emission control switch and the feedback amplifier” as recited in Applicant’s claim 11. Thus, Applicant respectfully submits that Davis fails to cure the deficiencies of Yoshikawa et al. and Kaplan described above.

Accordingly, Applicant respectfully submits that Yoshikawa et al., Kaplan and Davis, applied alone or in combination, fail to teach or suggest the unique combination and arrangement of elements recited in Applicant’s claim 11.

Claim 12 has been amended to recite:

A laser element driving apparatus comprising:
a laser element arranged to vary a light intensity corresponding to a current that flows thereto;
a photodetection element arranged to monitor and convert the light intensity of the laser element to electric signals;
an emission control switch arranged to control the current flowing to the laser element;
a feedback amplifier arranged to control the emission control switch by feeding back electric signals of the photodetection element;
an emission control switch controlling circuit arranged to control the emission control switch such that the current flowing to the laser element, when the laser element begins to emit light, is gradually increased; and
a power source switch arranged between a power source and an inner power source, and which opens and closes corresponding to intermittent control signals, the inner power source supplying power to the emission control switch and the feedback amplifier. (emphasis added)

The Examiner alleged that the combination of Yoshikawa et al. in view of Davis teaches all of the features recited in Applicant’s claim 12. More specifically, the Examiner alleged that Yoshikawa et al. teaches the features of claim 12 except for “[w]hen the laser element begins to

emit light, an emission control switch controlling circuit arranged to control the emission control switch such that the current flowing to the laser element is gradually increased.” To remedy this deficiency in Yoshikawa et al., the Examiner relied on Kaplan, alleging, “Davis discloses, ‘When the laser element begins to emit light, an emission control switch controlling circuit arranged to control the emission control switch such that the current flowing to the laser element is gradually increased’ (Fig. 2, pts. 14 and 35).” Thus, the Examiner concluded, “It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Yoshikawa [et al.] with the teachings of Davis. Implementation of a state change delay circuit as utilized by Davis would enhance the teachings of Yoshikawa [et al.] by providing a process by which signal irregularities are mitigated.”

Applicant has amended claim 12 to recite the feature of “a power source switch arranged between a power source and an inner power source, and which opens and closes corresponding to intermittent control signals, the inner power source supplying power to the emission control switch and the feedback amplifier.” Support for this feature is found, for example, in Applicant’s previously filed claim 18.

Neither Yoshikawa et al. nor Davis teaches or suggests this feature.

As discussed above, Yoshikawa et al. teaches a semiconductor laser driving system that includes a laser package 1, monitoring circuit 101, a controlling circuit 102, a powering circuit 103, and an abnormality detecting circuit 104, as shown in Fig. 1 of Yoshikawa et al. The controlling circuit 102 of the semiconductor laser driving system of Yoshikawa et al. further includes an analog switch 7 that is arranged to turn off the supply of power flowing from the powering circuit 103 to the laser package 1, as discussed in column 7, lines 39-47 and shown in Fig. 2 of Yoshikawa et al. In Paragraph No. 27 of the outstanding Office Action, the Examiner alleged that the controlling circuit discussed in column 3, line 48 to column 4, line 3 of Yoshikawa et al. corresponds to the power source switch that is presently recited in Applicant’s claim 11.

The Examiner has failed to clearly point out any portions of Yoshikawa et al. that could possibly correspond to a power source, a power source switch, or an inner power source. In

light of the Examiner's failure to clearly indicate which portion of Yoshikawa et al. corresponds to the power source switch, Applicant will assume *arguendo* that the Examiner is interpreting the analog switch 7 of Yoshikawa et al. as the "power source switch." However, the analog switch 7 of Yoshikawa et al. is merely arranged to provide a feedback path between the inverting input and the output of differential amplifier 5 of Yoshikawa et al. that will cause the transistor 10 of Yoshikawa et al. to turn off the power supplied to the laser package 1, as shown in Fig. 2 of Yoshikawa et al. At best, the only power supplied to the analog switch 7 of Yoshikawa et al. is the control voltage supplied from the AND gate circuit 24.

Thus, Yoshikawa et al. clearly fails to teach or suggest the feature of "a power source switch arranged between a power source and an inner power source, and which opens and closes corresponding to intermittent control signals, the inner power source supplying power to the emission control switch and the feedback amplifier" as presently recited in Applicant's claim 12.

Davis merely teaches an automatic power control circuit used in protecting a laser diode from maximum voltages, as discussed in column 4, lines 48-61 of Davis. Davis fails to teach or suggest the feature of "a power source switch arranged between a power source and an inner power source, and which opens and closes corresponding to intermittent control signals, the inner power source supplying power to the emission control switch and the feedback amplifier" as presently recited in Applicant's claim 12.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of claim 12 under 35 U.S.C. § 103(a) as being unpatentable over Yoshikawa et al. in view of Davis.

The Examiner relied upon Kaplan to allegedly cure the deficiencies of Yoshikawa et al. and Davis. However, Kaplan also fails to teach or suggest the feature of "a power source switch arranged between a power source and an inner power source, and which opens and closes corresponding to intermittent control signals, the inner power source supplying power to the emission control switch and the feedback amplifier" as recited in Applicant's claim 12. Thus, Applicant respectfully submits that Kaplan fails to cure the deficiencies of Yoshikawa et al. and

Davis described above.

Accordingly, Applicant respectfully submits that Yoshikawa et al., Davis and Kaplan, applied alone or in combination, fail to teach or suggest the unique combination and arrangement of elements recited in Applicant's claim 12.

In view of the foregoing amendments and remarks, Applicant respectfully submits that claims 11 and 12 are allowable. Claims 13-24 depend upon claims 11 and 12, and are therefore allowable for at least the reasons that claims 11 and 12 are allowable.

In view of the foregoing amendments and remarks, Applicant respectfully submits that this application is in condition for allowance. Favorable consideration and prompt allowance are solicited.

To the extent necessary, Applicant petitions the Commissioner for a ONE-month extension of time, extending to November 9, 2009, the period for response to the Office Action dated July 9, 2009.

The Commissioner is authorized to charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1353.

Respectfully submitted,

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